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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,563	12/19/2001	Yen-Chieh Huang	01-12-1832	8347

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EXAMINER
TRA, TUYEN Q

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 03/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/025,563	Applicant(s) HUANG, YEN-CHIEH	
	Examiner Tuyen Q Tra	Art Unit 2873	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Oath/Declaration

1. The declaration filed **12/18/01** is acceptable.

Claim Objections

2. Claims 1, 2, 10 and 13 are objected to because of the following informalities:

- Claims 1, 2, 10 and 13 states "capable of" this should be replaced with "operable for". Appropriate correction is required.

- Claim 9 states the method for performing comprising of step for "fabricating". Suggest to replace "fabricating" with "providing".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.
>
> The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims **1-14** are rejected under 35 U.S.C. 102(e) as being anticipated by (U.S. Pat. U.S. 6,167,169A).

a) With respect to claim 1, Brinkman et al. discloses in Fig. 56 a nonlinear optical crystal having an electrode-coated dispersion section (1477) in quasi-phase-matched (QPM) sections for electrically controlling the relative phase among the mixing waves thereby applying an electric

field thereto, whereby performing the nonlinear frequency conversion and amplitude modulation simultaneously (see Fig. 56).

b) With respect to claim 2, Brinkman et al. discloses wherein the nonlinear optical crystal is a material capable of being made into quasi-phase-matched (QPM) nonlinear optical element.

c) With respect to claim 3, Brinkman et al. discloses wherein nonlinear optical crystal is made of the material GaAs selected from a group consisting of LiNbO3, LiTaO3, KTIOP04, GaAs and RbTiOAsO4 (col. 41, line2).

d) With respect to claim 4, Brinkman et al. discloses wherein the electrode-coated dispersion section is sandwiched between two quasi-phase-matched (QPM) sections (see Fig. 56).

e) With respect to claim 5, Brinkman et al. further discloses wherein the electrode-coated dispersion section is coated with conducting electrodes (1482, 1488) on two opposite surfaces thereof (Fig. 56).

f) With respect to claim 7, Brinkman et al. further discloses wherein the electrode-coated dispersion section is sandwiched between quasi-phase-matched nonlinear gratings, the nonlinear gratings have both the grating vectors (1478, 1480) parallel to the wave vector of the mixing waves, and the amplitude modulation is dynamically adjusted to the desirable modulation regime with a direct-current voltage offset on the electrodes (Fig. 56).

h) With respect to claim 8, Brinkman et al. further discloses wherein the electrode-coated dispersion section is sandwiched between quasi-phase-matched nonlinear gratings, one of the nonlinear gratings has the grating vector parallel to the wave vector of the mixing waves, the other the nonlinear grating has the grating vector (1478, 1480) forming an angle (90°) with

respect to the wave vector of the mixing waves, and the amplitude modulation is dynamically adjusted to the desirable modulation regime by laterally translating the nonlinear crystal with respect to stationary mixing waves (Fig. 56).

i) With respect to claim 9, Brinkman et al. discloses apparatus and further with method for performing nonlinear frequency conversion and amplitude modulation, comprising the steps of fabricating a quasi-phase-matched (QPM) crystal with an embedded electrode-coated dispersion section; and applying an electric field to the electrode-coated dispersion section for controlling the relative phase among the mixing waves in the dispersion section, whereby performing the nonlinear frequency conversion and amplitude modulation simultaneously.

k) With respect to claim 10, Brinkman et al. discloses in Fig. 56 a nonlinear optical crystal having multiple electrode-coated dispersion sections monolithically integrated in cascaded quasi-phase-matched (QPM) sections for electrically controlling the relative phase among the mixing waves therein by applying an electric field thereto, whereby performing the nonlinear fi7equency conversion and amplitude modulation simultaneously.

l) With respect to claims 6 and 11, Brinkman et al. discloses in Fig. 56 wherein each of the quasi-phase-matched (QPM) sections is the crystal section for performing one of the nonlinear optical processes, including second harmonic generation (SHG), difference frequency generation (DFG), sum frequency generation (SFG), optical parametric generation (OPG), optical parametric amplification (OPA), and optical parametric oscillation (OPO) (col. 42, lines 45-47).

m) With respect to claim12, Brinkman et al. further discloses in Fig. 56 wherein the nonlinear optical crystal comprises two electrode-coated dispersion sections interleaved in three

quasi-phase-matched (QPM) sections for performing the nonlinear frequency conversion and amplitude modulation simultaneously.

n) With respect to claim 13, Brinkman et al. discloses in Fig. 56 a nonlinear optical crystal having at least one electrode-coated dispersion section integrated in cascaded quasi-phase-matched (QPM) sections for electrically controlling the relative phase among the mixing waves there mi by applying an electric field thereto; and

a waveguide formed in the nonlinear optical crystal for guiding the mixing waves through the QPM sections and the dispersion section in the nonlinear optical crystal,

whereby performing the nonlinear frequency conversion and amplitude modulation simultaneously.

o) With respect to claim 14, Brinkman et al. discloses in Fig. 56 wherein the waveguide is fabricated on the surface of the nonlinear optical crystal and the conducting electrodes are coated with conducting materials on the two sides of the waveguide, wherein the relative phase of the mixing waves is controlled by the applied electric field on the electrodes, thereby the wavelength converted output is amplitude modulated.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Khodja (U.S. 5,943,464 A) discloses a nonlinear optical device including poled waveguide and associated fabrication methods comprising of a nonlinear optical crystal having an electrode-coated dispersion section in quasi-phase-matched (QPM) sections.

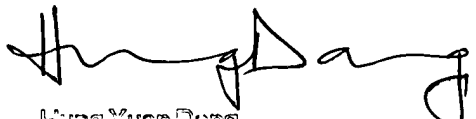
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (703) 306-5712. The examiner can normally be reached on Monday to Thursday from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (703) 308-4883. The fax number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Examiner: Tuyen Tra

Date: January 14, 2003



Hung Xuan Dang
Primary Examiner